

# SCIENCE & GOVERNMENT REPORT

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## Geological Survey Gains From Demise of 2 Agencies

Originally scheduled for dismemberment in House Republican plans for miniaturizing the federal government, the venerable US Geological Survey (USGS) is emerging bigger and richer than ever as the heir to two abolished agencies: the National Biological Service and the Bureau of Mines.

The final details of the turnabout in the fortunes of the 117-year-old USGS are obscured in the mists of the great budget battles between the White House and Congress. But what's clear for the present is that the Survey will absorb the whole National Biological Service, with some 1700 employees and a budget of \$137 million. By Congressional diktat, the Survey is to define the role and scale of its acquisition by the beginning of the next fiscal year, October 1.

In addition, on January 21, the Survey acquired 168 employees and \$16 million from the Office of Minerals Information in the Bureau of Mines.

For its own traditional activities, the Survey will receive

## Struggle Over Post of Chairman Shakes Academy of Engineering—P.6

a slight budget increase, about \$7 million, over last year, bringing this year's direct appropriations up to \$577 million. That's \$10 million below the 1994 appropriation. But it's not so bad, given that House Budget Chairman John Kasich (R-Ohio) last year proposed elimination of the Survey and many of its functions and a scattering of the surviving responsibilities to other federal agencies and the private sector [SGR, March 15, 1995].

The Geological Survey is part of the Department of the Interior, as were the National Biological Service and the Bureau of Mines, until the Republican Congress decreed their abolition by taking away their budgets. In the case of the Bureau of Mines, which was established in 1910, the wipe-out decision has resulted in the elimination of several regional centers, while others have been transferred to the Survey and the Department of Energy.

Prior to last year's Republican takeover of Congress, the Bureau of Mines had been in decline as its regulatory functions for mine safety were taken over by the Department of Labor and other activities were transferred to DOE. Left to the Bureau were the international monitoring of mineral activities and research on remediation of mining sites, pollution reduction and recycling of mineral products.

When Congressional Republicans targeted the Bureau, the White House and the top management of the Interior

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## Clinton's '97 Mini-Budget Pledges R&D Boost—But

The abbreviated budget document that the President sent to Congress last week allows the interpretation that additional money will be sought for some federal research programs for fiscal year 1997, beginning next October 1. Maybe. But in present fiscal and political circumstances, more is not likely to be very much more, if any at all.

The 20-page document, uncontaminated by proposed dollar amounts for the government's agencies, is capably worded and reads more like a political pamphlet than a bone-dry budget plan. The practice of mixing politics and budget statements long preceded Clinton's presidency. But with the federal budget process in turmoil, this latest production is notably heavy on politics and light on fiscal revelations.

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## In Brief

*Salaries and job offers for new graduates in science and engineering picked up a bit last year, according to a newly published report by the Commission on Professionals in Science and Technology (CPST). But the market remained relatively weak, the Commission says, and in several fields, including chemistry and engineering, salary increases lagged behind inflation. The survey findings are in: Salaries '96—Salaries of Scientists, Engineers and Technicians—A Summary of Salary Surveys, 17th Edition (276 pp., \$75 for Commission members, \$100 for others), order from: CPST, 1333 H St. NW, Room 111, Washington, DC 20005; tel. 202/326-7080; fax 202/842-1603.*

After four years as the first chief of the NSF Directorate for Social, Behavioral and Economic Sciences, Cora B. Marrett plans to step down next summer and return to the University of Wisconsin. The Directorate, considered ideologically suspect by Congressional Republicans, survived a near-death experience last year, but lately has drawn no political fire. Neal J. Smelser, Director of the Center for Advanced Study in the Behavioral Sciences, heads a screening committee to recommend a successor.

Two years ago, Rep. John D. Dingell Jr., often referred to as the most powerful man on Capitol Hill, routinely terrorized NIH and other federal agencies from his powerful perch as Chairman of the House Energy and Commerce Committee. The 1994 election returned Dingell but toppled him from the Chair, and as such things work in cruel Washington, he was swiftly relegated to invisibility. On February 4, an article in the Washington Post referred to Dingell as "the former Democratic congressman from Washington." Two days later, a correction stated, "He is currently a Democratic congressman from Michigan."

## ... Ideological Hostility Sank the Biological Service

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Department did not fight back, and attention then switched from survival of the Bureau to relocation of some of its components to the Geological Survey and DOE, which has taken on 500-600 Bureau employees from centers in Pittsburgh, Spokane, and Albany, Oregon.

For another 1000 or so employees, February 2 was the last federal payday. An unknown number—but probably not many—are in the process of moving to other federal agencies, some have found jobs outside of government, and some have retired. But the majority have moved into the ranks of the unemployed.

The demise of the Bureau of Mines is attributable to shrinkage from earlier transfers of its regulatory responsibilities to other agencies and, most recently, the raging political zest for reducing the size of government. In contrast, the National Biological Service was done in by pure ideological animosity.

Creation of the Biological Service was a pet project of Interior Secretary Bruce Babbitt, whose fervent environmentalism has spawned deep hatred in right-wing circles. He's particularly loathed by western ranchers who relish cheap rates for grazing on federal lands and timbering interests galled by restrictions that are intended to protect endangered species.

Arguing the need for systematic studies of the nation's biological resources, and in the face of strong Congressional hostility, Babbitt assembled the agency from within his own Department, taking all or parts of the Fish and Wildlife Service, the Park Service, the Bureau of Land Management, the Geological Survey, and the Bureau of Mines.

The original name for the new creation was the National Biological Survey—intended as a life-sciences counterpart of the Geological Survey. But Babbitt's opponents charged that the surveying consisted of federal agents intruding on private lands, identifying presumed endangered species, and imposing use restrictions on landowners.

The Department then quietly changed the name to the National Biological Service, and promised repeatedly that no entry on private lands would be made without the owners' permission. In appropriations hearings, the agency's officials argued that they were putting scientific rigor into the identification of endangered species, thus avoiding the costs and troubles of mistaken designations.

But the hostility to Babbitt and his creation was overflowing in Republican ranks, as well as among some Democrats. Whether it was labeled Survey or Service, its supporters in Congress could not muster the votes for salvation.

The conference report of the House and Senate Appropriations Subcommittees for the Interior Department refers to the "former" National Biological Service and the transfer of "natural resources research" to the Geological Survey, adding that legislative "managers intend the merger of these research activities into the USGS to be permanent." The

report says that the biological research "should be independent from regulatory control and scientifically excellent." It also says that "funds may not be used for new surveys on private property without the written consent of the landowner, that volunteers are to be properly trained, and that volunteer-collected data are to be verified carefully."

While the expansion of the USGS comes as a surprise, its survival in the face of termination threats provides some assurance that Congress is amenable to reasoned argument. The Congressional session opened last year with the Survey on the hit list assembled by Congressman Kasich's Budget Committee staff for implementation of the budget-cutting vows of the Contract with America. In Kasich's plan, the various duties of the Geological Survey were to be abolished, privatized or shifted to the National Science Foundation and other federal agencies.

In appropriations hearings, however, Survey officials explained that their agency is the nation's principal monitor of earthquake activity and water resources. Senator Slade Gorton (R-Washington), Chairman of Interior's Appropriations Subcommittee, perked up with interest when Survey Director Gordon Eaton pointed out that the State of Washington is seismically active and could be hit by the next big one. Senator Ted Stevens (R-Alaska) expressed concerns about his state. Eaton and company played the earthquake menace for full value.

At the conclusion of the hearing, Gorton said he and his colleagues recognized the importance of the Geological Survey and supported its survival.

The agency abolitions, transfers and budgets are all contained in an Interior Appropriations bill that was vetoed by the President, and then temporarily revived in continuing resolutions, the latest of which expires March 15. The hurriedly written resolutions, passed by wearied legislators in late-night sessions, are far from models of tightly drawn legislation. And agency officials are still trying to dope out the implications of some provisions.

But there's no doubt that the Bureau of Mines and the National Biological Service are gone, or that the US Geological Survey has survived the political storm in pretty good shape.—DSG

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## ... Decline in Discretionary Funds Undercuts R&D

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The White House says the dollar details will come during "the week of March 18," when the traditionally big budget book—delayed by the impasse between the White House and Congress—will be delivered to Capitol Hill.

Under the heading "Meeting America's Challenges," the short version boasts of reducing "discretionary spending over seven years, while investing in education and training; the environment, science and technology; law enforcement; and other priorities to help raise living standards and the quality of life for average Americans." It goes on to state:

"The budget also invests in science and technology, through a balanced mix of basic research, applied research, and technology development, including through cooperative projects with private industry and universities. It also adds funds for biomedical and behavioral research at the National Institutes of Health, for basic research and education at the National Science Foundation, for basic research at NASA (including Mission to Planet Earth) and other agencies, and for such important initiatives as the Advanced Technology Program and the Technology Investment Project."

Though the list reads like a bland menu of routine government activities, several of the items are at the heart of the ideological battle between the Clinton Administration and the Republican Congress over the appropriate federal role in science and technology.

Government funding of applied research and technology development is, with few exceptions, anathema to the reigning Republicans, who have abolished or substantially reduced Clinton's fast-growing programs in this area at the Commerce and Defense Departments. The market, they insist, is the best judge of research with commercial potential. NASA's Mission to Planet Earth has also been bashed, because it's favored by environmentalists, who irritate the Republican leadership, and it competes with the Space Station for NASA's shrinking budget.

Though the references to R&D matters in the short budget message are upbeat, there's little political will or loose change in Washington for expanding discretionary federal programs. The main exceptions are defense, which is always politically strong, and health research, beloved by the public but difficult to identify in the mists of Washington's budget wars. NIH beat the odds this year with a surprising 5.7 percent increase, but that comes after several years of real declines and substantial doubts about whether NIH can buck the tide again. For vote-seeking politicians, there's no political profit in research issues, since they're beneath the threshold of press and public attention and the scientific establishment daintily refrains from conventional political activity.

Researchers and their political friends have to some extent successfully played the political embarrassment card by issuing pained warnings of the damage that R&D budget reductions might inflict on a precious national resource. Such efforts have energized Democratic friends of science in

### *Countdown to Shutdown*

With NASA, EPA, NSF, the Commerce Department's many scientific and technical agencies and others operating on temporary budgets that expire on March 15, the chance exists for another disruptive shutdown if Congress and the White House don't make a deal in time.

But public disgust with the two prior shutdowns is so high that the President, House Speaker Gingrich and Senate Majority Leader Dole appear anxious to avoid another round.

With Congress out of town until the end of February, time will be short for taking the needed steps to keep the money flowing beyond March 15. The simplest approach would be to pass another bunch of continuing resolutions—essentially legislative shortcuts to the Treasury which permit spending to continue in the absence of appropriations bills passed by both houses and signed by the President.

The preference, of course, is for full-fledged appropriations bills that will extend to the end of the fiscal year, September 30. But anything is considered preferable to another round of shutdowns. NSF and several other agencies say they still haven't made up for the cancelled project reviews, delayed grant decisions and other disruptions caused by a month of closures.

Congress, plus a few oldline Republicans like Rep. Amo Houghton, of New York, and Vern J. Ehlers, of Michigan. But politicking by courteous proclamation has probably taken the scientific community as far as it can go.

Typical of such effusions of hurt and hope is a resolution adopted December 14 by the National Science Board, NSF's policymaking body. Citing "the prospect of an unprecedented decline in Federal support for civilian science and technology," the resolution warns that "Long-term budget constraints could have a serious impact on our nation's future well-being and the life and health of all its citizens." The resolution "urges that decisions on federal R&D budgets be framed with explicit attention to the fundamental importance of US leadership in research, for the economy and for the well-being of the nation."

The Clinton Administration and the Republican Congress insist that that's precisely how they are framing decisions on the federal R&D budget. The reality is that both are committed to massive reductions in federal spending, R&D included. The difference is that the Republicans have openly stated their designs for budget-balancing through a one-third reduction in federal spending by 2002. The White House is also committed to a seven-year course to the same goal, but has been sparing about details.

Either way, the financial prospects for research are dim—some would say calamitous.

## GAO Finds Merit in Advanced Technology Program

Slated for extinction because it's a poor substitute for the wisdom of the marketplace, according to Congressional Republicans, the Advanced Technology Program (ATP) at the National Institute of Standards and Technology has received a moderately favorable review from the General Accounting Office (GAO), so-called fiscal watchdog for the Congress.

The GAO evenhandedly concluded that ATP has put money into "projects that would have been funded in its absence and projects that would not have been funded." ATP was also rated successful in promoting joint research ven-

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**Measuring Performance: The Advanced Technology Program and the Private Sector** (GAO/RCED-96-47; 44 pp., no charge), order from: USGAO, PO Box 6015, Gaithersburg, Md. 20884-6015; tel. 202/512-6000; fax 301/258-4066.

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tures and speeding along the conduct of research by participating firms.

The GAO, however, did not examine whether ATP is a marketplace success, begging off on that point "because of the difficulty of assessing the net impact of ATP's investments in technology on the economy." It did note that the program is designed to take on high-risk projects for which alternative funding is not available.

A fast-growing pillar of the Clinton Administration's technology policy—rising from \$68 million in 1993 to \$341 million in fiscal 1995—ATP provides money on a cost-sharing basis for promising commercial research by teams of private firms. The Administration insists that the program is needed because of timidity by private venture capital sources, but Republicans have labeled it "corporate welfare" and eliminated further funding.

The GAO study, requested by an ATP booster, Rep. George Brown, of California, senior Democrat on the House Science Committee, derived its conclusions from a survey of 123 firms that received top-notch ratings on their applications during ATP's first four years of operation, 1990-93. Eighty-nine were funded and 34 were designated "near winners" in the GAO study. The GAO found that half of the near winners proceeded with the projects, but at a slower pace than previously planned, while the other near winners dropped their projects.

Whether winners or near winners, 77 of the firms "did not look for funding from other sources before requesting it from ATP," the report states. But that may not be as damning as it appears, since the GAO also found that "Those applicants that did look for funding looked for a long time and made many attempts to find funding, on average. Seven applicants," the report adds, "turned down offers from private sources because they could not reach an acceptable funding arrangement."

Of the 45 applicants that sought funding elsewhere prior

### When Money Runs Low

Signs of a coming fiscal drought are spreading throughout the research system, as overall federal funding of science and technology continues to decline.

The Fusion Energy Advisory Committee has advised the Department of Energy to shut down the Princeton Tokamak test reactor to cope with a fusion budget that's dropped from \$357 million last year to \$244 million in the current budget. More cuts are to be expected, according to the Congressional appropriations reports. In response, the Advisory Committee said that costly domestic development and construction programs should take second place to international activities and theoretical studies.

Meanwhile, the mathematical community, hard hit by PhD unemployment, is writhing over the University of Rochester's decision to terminate its doctoral program in mathematics and phase down its math faculty by half as a money-saving measure. The American Mathematical Society has condemned the move as demonstrating a "lack of understanding of the nature of mathematics, its role as a core discipline among the sciences, and its place in a well-rounded education." The University, in financial difficulties, appears unimpressed.

Financial strains are provoking some backbiting about who gets the money. In its latest annual recommendation for financing the National Institutes of Health, the Federation of American Societies for Experimental Biology takes a swipe at a coming increase in the share of NIH funds allotted to the Congressionally mandated program of Small Business Innovation Research. Now set at 2 percent of NIH's external awards, the SBIR share is due to rise to 2.5 percent next year. FASEB, whose membership is mainly academic, said Congress should exempt NIH from a preset proportion and redeploy unspent SBIR funds to basic research grants.

to applying to ATP, the GAO states, "about half were told by prospective funders that their projects were either too risky or 'pre-competitive,'"—characteristics that fulfill the aims of ATP funding."

Congressman Brown drew solace from the report, stating in a press release that "over half the winning ATP applicants are small companies with 100 or fewer employees," which said Brown, "flies in the face of the image critics try to paint of ATP as pork for huge multinationals."

The Republican Congress has marked ATP for zero in the budget of the Department of Commerce, NIST's parent agency. The President vetoed the bill for that reason and others, and now, ironically, ATP lives on into this fiscal year on continuing resolutions that tie its operations to last year's level of support.



## Biomedical Scientists Honor Congressional Friends

Two strategically situated legislators who delivered an unexpected budget increase for the National Institutes of Health have been selected for honors by the Federation of American Societies for Experimental Biology (FASEB), many of whose 44,000 members are professionally dependent on NIH grants.

The process may appear a bit crass to the politically naive, but it's well rooted in biomedical politics, presumably appreciated on Capitol Hill, and merits emulation by other scientific disciplines. FASEB has previously honored other helpful legislators, and in the same spirit of gratitude, major buildings on the NIH Bethesda, Md., campus bear the names of bountiful members of Congress.

The latest FASEB honorees are Senator Mark O. Hatfield (R-Oregon), Chairman of the Senate Appropriations Committee, and Rep. John E. Porter (R-Ill.), Chairman of the House Subcommittee on Appropriations for NIH. While the budgets of other federal science agencies are sinking or, at best, holding steady, Hatfield and Porter delivered a 5.7 percent budget increase for NIH—a boost unmatched this year in the civilian sector of government.

Moreover, while many other research agencies are living from one temporary spending bill to another as the White House and Congress bicker about the budget, the two Chairmen have provided NIH with funding, and therefore precious predictability, through the remainder of the fiscal year.

Both are to receive FASEB's 1996 Public Service Awards as a manifestation of "special gratitude of the scientific community for succeeding in the Capitol Hill battle to support basic biomedical research," in the words of FASEB President Ralph A. Bradshaw, UC Irvine.

Reading like a combat citation, the FASEB announcement of the awards states that "in the volatile funding atmosphere of the present Congress, Sen. Hatfield took decisive action to support biomedical research." And, "As NIH funding became entrapped in other budget controversies, Rep. John Porter continued a powerful focus on NIH funding." Hatfield is retiring from Congress at the end of this year, but Porter is likely to be there for a long time.

FASEB's Public Service Award has in the past gone to a variety of biomedical-research champions, in and out of the scientific community. Among the recipients over the past decade are NIH Director Harold Varmus, Deputy Director Ruth Kirschstein, and former Surgeon General C. Everett Koop. Then, too, there's the advice columnist Ann Landers, legendary for provoking astonishing volumes of mail to Capitol Hill on various issues, including support of health research.

The past political honorees include the late House Speaker Thomas "Tip" O'Neill (D-Mass.), who was warmly sympathetic to budget appeals from Boston-area biomedical institutions; former Senator Lowell Weicker (R-Conn.), a passionate supporter of biomedical research purely out of personal belief, and the late Rep. William Natcher (D-Ky.), a

generous Appropriations chairman whose name is attached to the newest building on the NIH Bethesda campus.

Natcher's eponymous predecessors on NIH real estate include the late Senators Lister Hill and Warren Magnuson and Rep. John Fogarty—in their day, all key figures in the NIH appropriations process.

With new construction at a low, the science establishment has few opportunities at present to immortalize its political friends at ribbon-cutting ceremonies. But retro-name opportunities are available on many existing buildings that bear bland designations.

An example clamoring for attention is NASA's headquarters, in downtown Washington, designated only by its mailing address, Two Independence Square. Another obvious candidate is close to Washington, in the Virginia suburb of Ballston, where the National Science Foundation is headquartered in a soulless new office building with just "National Science Foundation" engraved on its facade—helpful for first-time visitors, but clearly a missed opportunity for the financially struggling Foundation.

The Department of Energy's Washington headquarters bears the name of one of the nation's earliest and foremost Cold War warriors, James Forrestal, the first Secretary of Defense. But DOE's big administrative buildings in suburban Maryland go by the names of Cloverleaf, Century 21, Quince Orchard, etc., and like other address-only buildings, earn no gratitude on Capitol Hill.

There's an old saying in Congress that anything you do produces either enemies or ingrates. NIH and its clients provide an exception that should inspire the science establishment and keep the medal makers and masonry engravers quite busy.

### OTA Clone Gets Help

Several former staff members of the abolished Congressional Office of Technology Assessment are making progress toward establishing a non-profit research organization that will carry on some of the work and analytical techniques of OTA.

The new organization, the Institute for Technology Assessment (ITA), has received a \$10,000 planning grant from the Eugene Garfield Foundation, a Philadelphia-based philanthropy established by the founder of the Institute for Scientific Information and publisher and editor-in-chief of *The Scientist*.

Vary Coates, a former OTA staff member, says proposals are in preparation for studies in several areas, including telecommunications and financial services, industry environmental practices, and human genome patenting.

The Institute for Technology Assessment is at 2121 Wisconsin Ave. NW, Washington, DC 20007; tel. 202/333-8887; fax 202/333-5586; e-mail: ita@ita.mtppi.org

## House Hearings Scheduled on Agricultural Research

A House Agriculture Subcommittee announced plans last week for three days of hearings next month on agricultural research, education and extension, a creaky, financially declining system that has previously received little public attention on Capitol Hill.

Scheduled for March 12, 19 and 27, the hearings will be held by the Subcommittee on Resource Conservation, Research and Forestry, chaired by Rep. Wayne Allard (R-Colorado). Extensive preparations for the hearings have been underway for several months, including a call for input from organizations in the agricultural research community.

Thirty-six responses, based on a questionnaire circulated

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**Compilation of Agricultural Research, Education and Extension Questions for Discussion: Committee on Agriculture**, GPO Stock No. 552-070-18939-4; 490 pp., \$18; order from: Superintendent of Documents, USGPO, Congressional Sales Office, Washington, DC 20402-9315; tel. 202/512-1808; fax 202/512-2250.

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by the Subcommittee, have been published as a backdrop for the hearings. They include submissions by the National Association of State Universities and Land Grant Colleges, the World Bank, the US Department of Agriculture, and several universities.

It's not clear how the deliberations of Allard's Subcommittee will fit in with progress toward the overdue renewal of

basic federal farm legislation, which expired last year. The Senate last week passed a five-year bill. The House Agriculture Committee has approved a differing version, which still has to go to the floor. Neither bill provides for significant changes in research, education or extension. Those matters can be dealt with in separate legislation, but the political terrain becomes increasingly difficult as legislators focus on primary campaigns and the November elections.

An announcement from the Subcommittee says the first hearing will focus on goals and priority-setting and advisory mechanisms inside and outside the Department of Agriculture.

The second will be on intramural and extramural research programs, including "federal funding of inhouse, formula, competitive and special research programs."

The final session will cover the distribution of information from government-supported research "and how federal funds for information dissemination can be leveraged in a declining budget environment."

The Subcommittee announcement says the witness list for the hearings is now being prepared and that organizations and individuals that want to testify or submit statements for the record should get in touch by February 21 with John J. Goldberg, the staff member for the hearings, at: Committee on Agriculture, 1301 Longworth House Office Building, Washington, DC 20515; tel. 202/225-4980; fax 202/225-4369.

## Selection of Chairman Stirs Fight at Engineering Academy

A new managerial battle was raging last week at the National Academy of Engineering (NAE), recently home to so much strife that, in Washington research-policy circles, the institution is increasingly regarded as dysfunctional.

This time the elite of the engineering profession are at war over filling the NAE's number two position, Chairman, now occupied by Norman R. Augustine, CEO of Lockheed Martin, whose term expires at the end of June. Citing his workload, Augustine declined another term.

The nomination process for a successor takes place against a background of deep animosity between the NAE's 18-member governing Council, dominated by the old guard, and the NAE President Harold Liebowitz, who took office last July, after winning by 697-660.

Now 72, Liebowitz, a self-styled reform candidate, got on the ballot through a membership petition after being rejected by the nominating committee, which he deemed part of an old-boy system that excluded the bulk of the NAE's 1400 active members from participation in the organization. Among his detractors in the NAE, he's regarded as erratic, confused, and lacking in mana-

gerial capacity. As reported in *Science* of December 22, the Council has clipped President Liebowitz's authority for hiring, firing and spending.

The nominating committee, now chaired by an old ally of Liebowitz, J. Fred Bucy, retired head of Texas Instruments, came up with a choice for a new Chairman—a post that customarily goes to industry, while the Presidency is usually filled from academe or government service. The candidate was Alan M. Lovelace, a retired General Dynamics executive.

But the Council, SGR was told by a source, said that it wanted a sitting CEO for the job. On the nominating committee, some sentiment was also reported for giving the NAE membership a choice of candidates.

Lovelace told SGR last week that he had agreed to be considered for the Chairmanship but had not heard anything about a selection. The NAE management, hired and elected, was notably uncommunicative about the nomination controversy.

But there's more and more shaking of heads in Washington about the institution which regards itself as the honorary apex of the engineering profession and a major adviser to the federal government.

# In Print

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**From the RAND Critical Technologies Institute (CTI):**

***The Global Positioning System (GPS): Assessing National Policies*** (368 pp., \$30), examines the commercial and national-security implications of rapidly expanding civilian use of GPS, an Air Force-operated system of 24 satellites that reliably pinpoints positions on earth. With civilian use now outpacing the initial purposes of missile guidance and other military purposes, the report says the US government should run the system gratis to discourage other nations from developing their own systems. Addressing fears of military use against the US, the report advises the US to develop electronic countermeasures and to seek diplomatic understandings against hostile use.

The report was prepared by a group headed by Scott Pace. CTI, a branch of RAND, is a federally funded R&D center serving the Office of Science and Technology Policy, which requested the study.

Order from: RAND Distribution Services, 1700 Main St., PO Box 2138, Santa Monica, Calif. 90407-2138; tel. 310/451-7002; fax 310/451-6915; Internet: order@rand.org

**From the National Academy of Sciences:**

***A Science Strategy for Space Physics*** (81 pp., no charge), says space physics has matured from "simply looking to see what is out beyond Earth's atmosphere," and has become "a 'hard' science, focusing on understanding the fundamental interactions" of particles, fields, gases, etc., and planetary magnetospheres, ionospheres, and upper atmospheres. In harmony with political advice for basic science to stress utility, the report says the ensuing knowledge "goes beyond basic physics and intellectual curiosity," and illuminates environmental problems on earth. Priority topics for research over the next decade are listed, along with recommendations for "research emphases." Supported by NASA, the report was produced by the Committee on Solar and Space Physics and the Committee on Solar-Terrestrial Research.

Order from: Space Studies Board, National Academy of Sciences, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-3477; fax 202/334-3701.

***Improving the Environment: An Evaluation of the DOE's Environmental Management Program*** (211 pp., \$29, plus \$4 for shipping), a few kind words for DOE, but in general, a woeful report on its response to the mess left behind by the nuclear arms race. The cleanup budget is \$6.5 billion a year, but, the report says, "The shocking fact ... is that fully \$4 billion of it is spent simply to maintain facilities and sites in an attempt to contain contamination and to maintain old facilities for which funds for decommissioning are unavailable." John F. Ahearn, Lecturer in Public Policy at Duke University, chaired a "Synthesis Subcommittee" that prepared the report. Paul Gilman, of the Academy staff, was Project Director.

Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800/624-6242 or 202/334-3313.

***Barriers to Science: Technical Management of the Department of Energy Environmental Remediation Program*** (23 pp., no charge), an extremely critical assessment of DOE efforts to clean up its radioactive waste sites, with specific references to Lewiston, NY; Fernald, Ohio, and Richland, Washington. Written by the Academy's Committee on Remediation of Buried and Tank Waste, created in 1993 to evaluate DOE's progress, the report acknowledges that DOE faces political problems, but concludes that its stumbling performance is mainly of its own making. Among the problems cited is internal "disbelief" that DOE can do the job. Robert J. Budnitz, of Future Resources Associates, Berkeley, Calif., chaired the Remediation Committee, and Robert S. Andrews, of the Academy staff, was Senior Staff Officer for the report.

Order from: Board on Radioactive Waste Management, National Academy of Sciences, 2001 Wisconsin Ave. NW, HA456, Washington, DC 20007; tel. 202/334-3066; fax 202/334-3077.

**From the American Association for the Advancement of Science:**

***Working With Congress: A Practical Guide for Scientists and Engineers*** (172 pp., \$15.95, plus \$4 for shipping), update of the 1992 debut edition of a manual for pushing the cause of research on Capitol Hill and also for finding out what's going on there. The new edition provides electronic addresses for tracking events in Congress and for communicating with members. The author, William G. Well Jr., a former White House and Congressional staffer, is Associate Professor of Management Science at George Washington University.

Order from: AAAS Distribution Center, PO Box 521, Annapolis Junction, Md. 20701; tel. 1-800/222-7809; fax 301/206-9789.

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(Copies of publications listed here are available from the indicated sources—not from SGR)

**From the Science Policy Research Division of the Congressional Research Service, part of the Library of Congress, no charge:**

**Federal Research and Development Funding: A Concise History** (95-1209 SPR; 11 pp.), presents the big picture over the postwar years for civilian and defense R&D. In 1970, they were close—about \$8 billion for the Pentagon and other national-security agencies, and \$7 billion for all the federal civilian departments and agencies (in current dollars). By 1985, as the military buildup initiated by Carter and accelerated by Reagan took hold, the military share reached \$30.3 billion, while the civilian total stood at \$16.8 billion. In 1995, following Clinton's pledges to even them up, the military share declined, but was still ahead, by \$38 billion to \$30 billion for civilian R&D. The report, by Richard E. Rowberg, states that funding growth "appears to have stopped and is likely to decline for at least several years."

**Drug Regulation: Historical Overview and Current Reform Proposals** (95-962 SPR; 25 pp.), a quick review of the evolution of FDA and its regulatory procedures as background for changes that have been proposed in Congress. Summaries of major bills are included, along with a review of steps taken by the Clinton Administration in response to allegations of bureaucratic dawdling in the review processes. The report is by Blanchard Randall.

**Food and Drug Administration: Current Reform Initiatives** (95-1184 SPR; 45 pp.), reviews legislative proposals to change FDA's authority and procedures, and includes the text of a seminar last fall on Current Reform Initiatives, with participation by Richard Merrill, former FDA Chief Counsel; William B. Schultz, FDA Deputy Commissioner for Policy; Thomas M. Lenard, Director of Regulatory Studies, Progress and Freedom Foundation; William M. Merino, Senior VP, Worldwide Regulatory Affairs and Quality, Parke-Davis Pharmaceutical Research Division, Warner-Lambert Co., and Mark Silbergeld, co-Director, Washington Office, Consumers Union. The report is by Donna U. Vogt.

Order through a House or Senate member. Senate switchboard, 202/224-3121; House, 202/225-3121. Cite the Congressional Research Service as the source, with report title and number.

**From the Office of Technology Policy, US Department of Commerce:**

**A Guide to Japan's Patent System** (PB96-129135; 208 pp., \$36.50, plus \$4 for shipping), "an introduction to understanding the issues and participants in Japan's patent process," with discussions of procedures, costs, comparisons with the far-different US system, plus patent statistics, sources of additional information, instructions for electronic

searches, etc. The *Guide*, by Mindy L. Kotler, of the Japan Information Access Project, and Gary W. Hamilton, of the Akin, Gump, et al., Washington law firm, is derived from papers presented at the fourth annual conference on Japanese Scientific and Technical Information, July 1994, in Boston.

**Japanese Research Projects and Intellectual Property Law** (PB96-123039; 64 pp., \$19.50, plus \$4 for shipping), notes that opportunities are increasing for US firms to enter into collaborations with R&D programs subsidized by the Japanese government, and cautions that "participants must be prepared to deal with the difficulties that arise out of close government supervision" of assisted projects. The author is Gregory Rutchik.

**Meeting the Challenge: US Industry Faces the 21st Century—The Chemical Industry** (PB96-138094; 89 pp., \$19.50, plus \$4 for shipping), first of a planned series of industry reports by the Commerce Office of Technology Policy, this one notes that the chemical industry is the nation's number one exporter, with 10 percent of US sales abroad. Of its 1 million employees in 1994, 8.5 percent were R&D scientists and engineers. Future growth is likely to come from subsidiaries in developing nations, the report states. The effects on domestic employment, an increasingly sensitive issue, are not discussed. The report stresses the importance of chemical R&D, while noting that rising costs can lead to reductions in long-term basic research and mergers that diminish the total amount of R&D. The authors are Allen J. Lenz, Director of Economics, Chemical Manufacturers Association, and John Lafrance, of the Office of Technology Policy.

Order from: National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161; tel. 703/487-4650; fax 703/321-8547.

**From the Organization for Economic Cooperation and Development (OECD):**

**Research Training: Present and Future** (226 pp., \$58), papers discussing how academic programs are responding to economic pressures, technological change, and difficult job markets for graduates in Australia, Canada, Finland, Italy, Japan, UK, US, Czech Republic, and France. The report is introduced by Stuart Blume, University of Amsterdam.

Order from: OECD Publications and Information Center, 2001 L St. NW, Suite 700, Washington, DC 20036-4910; tel. 202/785-6323; fax 202/785-0350; also available from bookshops and OECD offices in major cities around the world.

**From the American Cancer Society (ACS), no charge:**  
**Cancer Facts and Figures—1996** (33 pp.), annual report showing 30-year trends in death rates, new cases by body site and geographic location, trends in survival rates, etc.

**Cancer Risk Report: Prevention and Control—1995** (24 pp.), data on tobacco use, nutrition and physical activity, and cancer screening.

Order from local ACS divisions or from ACS National Media Office, 1180 Ave. of the Americas, New York, NY 10036; tel. 212/382-2169; fax 212/719-0193.

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